

New record of Opah *Lampris guttatus* (Lampridae) in the Adriatic waters with a review of Adriatic records

by

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RÉSUMÉ. - Nouveau signalement du poisson lune *Lampris guttatus* (Lampridae) en mer Adriatique avec analyse des signalements en Adriatique.

Le 13 juillet 2003, un spécimen de *Lampris guttatus* (Brünnich, 1788) mesurant 98,3 cm TL et pesant 25,57 kg, a été capturé au filet maillant dérivant appelé "barracuda" (à une profondeur de 28 m) près de l'île de Vir (Adriatique moyenne orientale, côte croate). Les caractères morphométriques et méristiques, ainsi que le contenu de l'intestin sont présentés. Tous les signalements en Adriatique sont également analysés.

Key words. - Lampridae - *Lampris guttatus* - MED - Adriatic - Records.

The opah (also known as the spotted moonfish) *Lampris guttatus* (Brünnich, 1788) is a deep-bodied, compressed fish, which has a worldwide oceanic distribution (cosmopolitan in temperate and tropical seas). It is a mid-water species, which lives at depths between 100 and 400 m (Palmer, 1986). It could reach 200 cm TL and weight of 270 kg (Gon, 1990). Jardas (1996) noted that opah is a very rare species in the Adriatic Sea. The main goal of this study is to present a new record and to review all Adriatic records of this rare species. We also present morphometric and meristic properties and the gut content of caught specimen.

On 13 July 2003, a specimen of *L. guttatus* (female, weight of ovaries was $W_o = 216$ g, stage II, according to Nikolsky (1976), the specimen was identified as an immature by macroscopic inspection of gonads) measuring 98.3 cm TL and weighing 25.57 kg (Fig. 1) was captured by gill-net called 'barakuda', at a depth of 28 m, near island Vir (eastern middle Adriatic, Croatian coast) (Fig. 2). The specimen was identified in accordance with Jardas (1996). For morphometric data a board rule and a calliper (0.1 mm) were used. Counts were also recorded and compared with other reports from the Adriatic and elsewhere.

The main morphometric and meristic data of the specimen are: total length (TL) = 98.3 cm; standard length (SL) = 85.4; fork length (FL) = 91.6; head length (HL) = 25.1; predorsal length = 41.5; preanal length = 59.7; preanus length = 55.4; preventral length = 46.6; prepectoral length = 28.2; dorsal fin length = 48.5; dorsal fin height = 23.7; anal fin length = 27.3; pectoral fin length = 28.5; ventral fin length = 27.2; caudal fin length = 23.4; eye diameter = 6.48; interorbital length = 10.84; preorbital length = 6.4; postorbital length = 12.22; max. body depth = 49.2; min. body depth = 6.66; peduncle length = 3.58; premaxilla length = 7.58; total length/standard length = 1.15; total length/max. body depth = 2.00; total length/head = 3.92; max. body depth/head = 1.96; head/eye diameter = 3.87; dorsal fin rays (D) 51; anal fin rays (A) 39; pectoral fin rays (P) 22; ventral fin rays (V) 14; caudal fin rays (C) 5+19+5; Brsp 16 (3+13), 11. Standard counts and measurements fit previous

descriptions of the species, such as in Katuriċ (1902) (D 52, A 39, P 20, V 13, C 5-17-4), Tortonese (1970) (D 52-55, A 38-41, P 23-25, V 14-17) and Hart (1973) (D 48-55, A 33-41, P 20-24, V 14-17).

The earliest known reference to the occurrence of opah in Adriatic waters is that of Katuriċ (1902). On 12 March 1902, a specimen of *Lampris guttatus* measuring 115 cm TL and weighing 37 kg (without gill-rakers and digestive tract) was caught in Novigrad Sea, near settlement Posedarje (eastern middle Adriatic, Croatian coast) (Fig. 2) (specimen preserved in the Natural History Museum in Zadar). Katuriċ (1902) also stated that another specimen was also caught few days before the first one, but he did not see it because fisherman sell it to one captain. That specimen was smaller and its weight according to fisherman was 27 kg. Crnković (1957) reported another specimen measuring 106 cm TL and weighing 29 kg caught on 9 October 1956 by tuna trap (as a by-catch of tuna fisheries) in Bakar Bay, near settlement Bakarac (northern Adriatic, Croatian coast) (second record). This is probably the northernmost record of this species in the Mediterranean area (Fig. 2). Bartulović (pers. comm.) reported one specimen of opah (without total length, weighing around 28 kg) caught on 15 October 1994 in Soline-Klek-Blace area near river Neretva estuary, south Adriatic (third record).

In spite of its undoubted presence in the Mediterranean (Palmer, 1986; Bauchot, 1987) published papers on its occurrence (date of capture, location), morphometrics, length and weight data, food and feeding are very scarce. It is also very interesting that Palmer (1986) did not include Adriatic in the *L. guttatus* area of distribution although Šoljan (1948, 1975) included it in the list of Adriatic ichthyofauna. Most of those papers and lists confirm the presence of this species in specific area such as Gulf of Lion, Balearic Islands and Greek waters, but without any other data. Tortonese (1970) noted the catch of two specimens in Ligurian Sea (one specimen caught near Viareggio – TL = 180 cm, W = around 100 kg – preserved in Natural Museum in Genova, second specimen caught in the Ligurian Sea – TL = 95 cm, W = 28 kg, preserved in Natural Museum in Milano). Andaloro and Di Natale (1979) reported about of an opah (TL = 96.0 cm, W = 39kg), which has been captured in Southern Tyrrhenian Sea (Pizzo Calabro) on 24 April 1979 (at the depth 240 m). The records and published reports on opah in other areas are more frequent: for example, Irish waters (see Quigley *et al.*, 1997), Gulf of Maine (De Witt *et al.*, 1981), southern Indian Ocean (Prut'ko, 1979), Venezuela waters (Alvarez *et al.*, 1996), Gulf of California (Castro Aguirre *et al.*, 2001), Pacific waters off the southern Kuril Islands (Parin *et al.*, 1995) southern West Atlantic (Oelschlaeger, 1974), and south Australian waters – New South Wales (Glover *et al.*, 1994).

An analysis of the stomach contents showed: at least 5 digested bony fishes of different length (vertebrae, scales), of which it was possible to determine one species – red bandfish *Cepola macrophthalmia* measuring about 25 cm TL; at least 13 specimens of

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Figure 1. - Caught specimen of *Lampris guttatus* near island Vir, eastern Adriatic (TL = 98.3 cm; W = 25.57 kg). [*Lampris guttatus* capturé près de l'île de Vir, Adriatique orientale (TL = 98,3 cm ; W = 25,57 kg).]

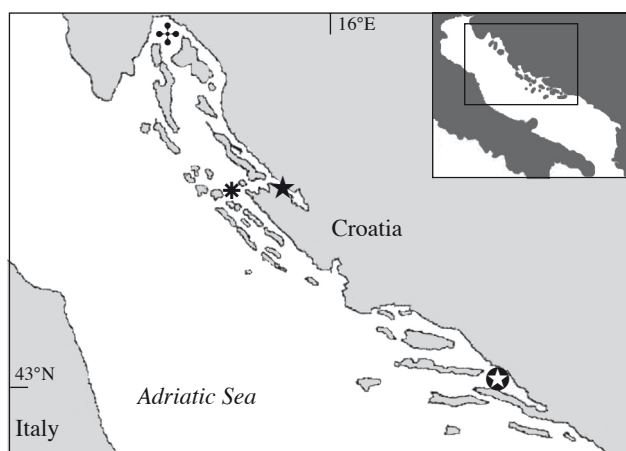


Figure 2. - Map with the locations where *Lampris guttatus* was recorded in the Adriatic Sea. ★: First record near Posedarje in 1902; ✱: Second record in Bakar Bay in 1956; ⊙: Third record near river Neretva estuary in 1994; *: New record near island Vir in 2003). [*Localisation des captures de Lampris guttatus dans l'Adriatique*. ★: Premier signalement près de Posedarje en 1902 ; ✱: Deuxième signalement dans la baie de Bakar en 1956 ; ⊙: Troisième signalement près de l'estuaire de la rivière Neretva en 1994 ; *: Nouveau signalement près de l'île de Vir en 2003.]

cephalopoda of different size (upper and lower mandibles, eye lens), according to shape of upper and lower mandibles we can conclude that they belongs to at least 3 species; Isopoda (2 specimens), several digested crustaceans; and, as non-natural food, 2 fragments of *Posidonia oceanica* (6.5 cm length), some parts of plastic bags, one part of *Quercus illex* leaf and some algae (no possibilities to identify them). This shows that opah is a voracious fish, which feeds actively on benthic (red bandfish) and pelagic prey in the area of its capture. This is the first data on the diet of this species in the Adriatic Sea.

L. guttatus are known to feed on a large range of pelagic prey including squid (*Torarodes*, *Ommastrephes* and *Onychoteuthis*), fish (*Gadiculus argenteus*, *Micromesistius poutassou*, *Clupea harengus*, *Argentina silus*), crustacea (*Thysanoessa inermis*) (Quigley et al., 1997) and scyphomedusae (McKenzie and Tibbo, 1963). However, Gudger (1926) found large numbers of the littoral clam *Donax variabilis* in the stomach of an opah stranded on the west coast of Florida, suggesting that the opah had been feeding in shal-

low water. Palmer (1986) noted that opah feeds on midwater fishes and invertebrates, mainly squids, while Hart (1973) noted it feeds on bony fish (hake, rockfishes *Sebastidae*, finfish), benthic crustaceans and swimming crabs. Prut'ko (1979) found squids and fish *Paradiplospinus antarcticus* (18 specimens, 28-29 cm length) in stomach of opah specimen from the southern Indian Ocean (Antarctic Convergence Area). Bane (1965) also reported squids (80.7% of the stomach volume) and fishes (gempylids, paralepids, *Coryphaena hippurus*, *Beryx* sp. and some other berycoid fishes) in stomach of opah from Puerto Rico.

We also found in a stomach a great number of larval nematode stages (III) of *Anisakis* sp. It seems that various types of parasites exist in opah, since behind our findings on *Anisakis* sp.; Tortonese (1970) noted the presence of cestodes *Callotetrarhynchus* sp., while Delamure and Serdnokov (1970) the presence of trematodes *Lampritrema atlanticum*. Bane (1965) found six nematodes in the mesenteric region around the stomach and two elongate, brownish digenetic trematodes from the stomach in the opah from Puerto Rico. Wierzbicka (1980) reported the presence of two trematodes (*Neolamprididymozoon fermicola* and *Metadidymocystis cymbiformis*) in the northeast Atlantic opah.

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